

CLAIMS

1. Apparatus for shaping a web (2) made of a flexible material, comprising at least one feed roll (5, 5') adapted to deliver the web (2) continuously in accordance with a law of given displacement ( $X_e$ ) and speed ( $V_e$ ), a shaping roll 5 (3) associated with a counterpart roll (3') adapted to shape the web over at least a part of its peripheral length, this shaping roll being constituted by a support roll (3a) on which at least one interchangeable shaping element (3b) is added, fixed on its outer surface, and which is animated by a movement of rotation in accordance with a law of given displacement ( $X_c$ ) and speed ( $V_c$ ), characterized in that it comprises, between the feed roll (5) and the shaping roll (3), a regulating module (7) provided with take-off means (13, 13'; 9, 9') adapted to control the displacement ( $X_n$ ) and the speed ( $V_n$ ) of the web (1) upstream of the shaping roll (3) and at least one mobile guide element (9, 9') adapted to exert on at least one buffer loop (8) of the web (2) formed between said rolls (5, 3), a positive guiding of which the displacement is controlled in accordance with a determined law.  
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2. Apparatus according to Claim 1, characterized in that the law of displacement of the mobile guide element (9, 9') of the web (2) is a function of the law of displacement ( $X_e$ ) of the feed roll (5, 5') and of the law of displacement ( $X_n$ ) of the take-off means (13, 13'), itself a function of the law of displacement ( $X_c$ ) of the shaping roll (3).  
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3. Apparatus according to one of Claims 1 or 2, characterized in that the take-off means are constituted by at least one roll (13, 13').
4. Apparatus according to one of Claims 1 or 2, characterized in that the take-off means are constituted by the mobile guide element (9), the latter being formed by a rotating roll around which the web (2) winds; at least one rotating  
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roll (13, 13') animated by a peripheral speed greater than that of the web (2) being disposed between the shaping roll (3) and the guide roll (9).

5. Apparatus according to Claim 2, characterized in that the guide element (9) is constituted by a rotating roll around which the web (2) winds.

5 6. Apparatus according to Claim 2, characterized in that the guide element (9) is constituted by a piece (9') fixed in rotation, around which the web (2) winds.

7. Apparatus according to Claim 6, characterized in that the guide element (9') is provided with means for blowing a gas adapted to create between itself 10 and the web (2) a cushion of gas.

8. Apparatus according to one of the preceding Claims, characterized in that the displacement of the guide element (9, 9') is linear.

9. Apparatus according to Claim 8, characterized in that the linear displacement of the guide element (9, 9') is obtained by a linear motor 15 comprising primary and secondary poles mobile with respect to each other and means for controlling their relative movements, the guide element (9, 9') being fast with one of these poles.

10. Apparatus according to Claim 8, characterized in that the linear displacement of the guide element is obtained by a system constituted by a 20 connecting rod (10) articulated at one of its ends on the latter and at its other end on a crank (12) whose angular position determines the linear function of the guide element (9').

11. Apparatus according to one of Claims 1 to 7, characterized in that the displacement of the guide element (9, 9') is circular.

25 12. Apparatus according to Claim 11, characterized in that the guide element is constituted by a guide roll (9) arranged so that it is adapted, in the course of its displacement, to remain tangential to another roll (24, 13), the web (2) being

admitted between these rolls (9, 24, 13) and winding around the latter in order then to go in the direction of the shaping roll (3).

13. Apparatus according to Claim 12, characterized in that said other roll is constituted by a regulating roll (24).

5 14. Apparatus according to Claim 12, characterized in that said other roll is constituted by the take-off roll (13).

15. Apparatus according to Claim 13, characterized in that the circular displacement of the guide (9) and regulating (24) rolls ensures control of position ( $X_n$ ) and of speed ( $V_n$ ) of the web upstream of the shaping roll (3).

10 16. Apparatus according to one of Claims 12 to 14, characterized in that the guide roll (9) and said other roll are servo-controlled by each other in rotation.

17. Apparatus according to one of the preceding Claims, characterized in that it comprises, between the feed roll (5) and the take-off means (13), a system (11) for controlling the tension of the web.

15 18. Apparatus according to Claim 17, characterized in that the feed roll (5) is servo-controlled by the system for controlling the tension of the web so as to ensure maintenance of the tension of the latter at a constant value.

19. Apparatus according to one of the preceding Claims, characterized in that it comprises means adapted to read a cyclic mark disposed on the web, to 20 compare the position thereof with a reference of position of the shaping roll and, as a function of this comparison, to modify the positioning of the web with respect to the shaping roll.